

**REMARKS**

A new Figure 1 is attached for the examiner's approval. The reference character "92" has been added. The examiner has objected to the specification as failing to provide the proper antecedent basis for the term "a temperature modification mechanism. While the term "temperature modification mechanism" does not appear *in haec verba*, nevertheless it cannot be doubted that a fan to cool the part is a "temperature modification mechanism". Thus, this objection is not thought to be well taken.

The examiner has objected to claim 35 as not adding structural limitations to claim 34. This objection is respectfully traversed. Claim 35 requires that the mist engages the surface of the metal object in an oxidizing atmosphere. It is submitted that while this is not a physical structure, it still is structural in the sense that the structure causes the mist to engage in an oxidizing atmosphere. This is a structural limitation and not an intended use or function.

The dependency of claim 36 has been changed as required by the examiner.

Claim 10 has been amended to recite the "control mechanism" rather than the "control device".

The examiner has rejected claims 1-7, 9, 10, 30, 31 and 40 under 35 USC § 112, second paragraph, as being indefinite. As pointed out above, a fan is a temperature modifying device, so this rejection is respectfully traversed. Claims 1 and 43 have also been amended to recite the "caustic composition" contained in the aqueous solution. This has a clear modifier in the aqueous caustic solution.

Claims 1, 3, 5, 7 and 43 have been rejected under 35 USC § 103 (a) as being unpatentable over Fukui et al, U.S. Patent 3,617,039, hereinafter Fukui et al. This rejection is not thought to be well taken. First, it should be remembered that claim 1 requires a control mechanism to

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control the temperature modifier mechanism responsive to the sensed temperature of the surface to a temperature above the melting point of the caustic composition, and below the temperature at which the Leidenfrost effect appears. It is submitted that Fukui et al do not recognize the Leidenfrost effect as being important, and clearly do not control the temperature to a level below which the Leidenfrost effect appears.

It is pointed out that the Fukui et al patent is directed to two separate and distinct embodiments disclosed in the patent for practicing their invention. In one embodiment, which is exemplified in all enumerated examples, the steel to be treated for descaling is first coated with an aqueous solution of an alkali metal hydroxide and then heated. This is the embodiment described at various locations, e.g., column 6, lines 38-40, and column 6, lines 18-22, wherein it is stated “...after wetting of the steel surface with the aqueous metal compound, it is usually sufficient that the temperature of the furnace or the like heating device is maintained only slightly above the melting point of the respective metal hydroxide.” In column 4, lines 32-33, column 5, lines 35-37, and column 5, lines 42-44, this first embodiment where the alkali hydroxide is first applied to the surface and then the strip heated is also described.

The second embodiment of Fukui et al involves first heating the steel strip to an elevated temperature and then spraying with the aqueous solution of alkali metal hydroxide. This is the embodiment referred to in column 3, lines 21-28, wherein patentee states “According to this second embodiment of the invention, the stainless steel to be descaled and emanating from a steel heat treatment, such as annealing, is advantageously first cooled to a suitable temperature which, however, is still higher than the melting temperature of the alkali metal salt....” Thereafter, the surface is wetted. However, in this second embodiment wherein the steel strip is first heated and then sprayed with the aqueous solution, it is instructive to note the patentees’ description starting at

column 7, lines 57-66, wherein it is stated "Referring now to the inventive construction as illustrated in FIG. 2, it will be noted that the steel strip 1' first passes in conventional manner through the annealing furnace 2' in the same manner as indicated in the construction of FIG 1. However, after the steel strip has exited from the annealing furnace in which it has obtained a temperature of approximately 1,100°C, the steel strip is not cooled down to the 200-300°C as in the FIG. 1 embodiment, but is rather cooled to a temperature of about 600-900°C only, which is above the melting point of alkali metal hydroxide or salt." (emphasis supplied) Thus, as clearly delineated by the patentee, the aqueous solution is sprayed onto the steel strip which is held at a temperature of between 600° C and 900° C, which is 1,112° F to 1,652° F. This is way above the highest temperature permissible (e.g. about 750°F) without encountering the Leidenfrost effect as can be seen in Table 1, no matter what concentration of the alkali hydroxide is used.

Moreover, Fukui et al teach nothing about Leidenfrost, nor how to avoid the effect nor even recognize the Leidenfrost effect may be occurring. Clearly, it is the applicants who have noted that the Leidenfrost effect is a determining factor and the limiting factor on the upper temperature to which the strip can be heated before spraying and this is from the applicants' teaching, not from anything in Fukui et al since Fukui et al are spraying on a temperature wherein the Leidenfrost effect will be present, but this is unrecognized by Fukui et al.

From the above, it is clear that with the second embodiment described in Fukui et al, the temperature of the strip onto which the solution is sprayed is significantly above the highest temperature in the applicants' invention. Moreover, there is no reason to believe, nor is there any indication in Fukui et al, that the lower temperature used when the solution is sprayed on an ambient temperature strip and the strip then heated as in the first embodiment, could be substituted for the much higher temperature used in the second embodiment. Indeed, the disclosure in Fukui et al of

the higher temperatures in the second embodiment is a teaching away from the use of the lower temperatures when the solution is to be sprayed onto a preheated strip of material; and there is no recognition of the Leidenfrost effect. Thus, it is believed that claims 1, 3, 5, 7 and 43 are clearly allowable over Fukui et al.

It is not enough that one may modify a reference, but rather it is required that a second reference suggest such modification of the first reference.

The CAFC stated In re Piasecki, 745 F.2d 1468, 223 USPQ 785, 788 (Fed. Cir. 1984) the following:

"The Supreme Court in Graham v. John Deere Co., 383 U.S. 1 (1966), focused on the procedural and evidentiary processes in reaching a conclusion under Section 103. As adapted to ex parte procedure, Graham is interpreted as continuing to place the "burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of an application under sections 102 and 103". Citing In re Warner, 379 F.2d 1011, 1020, 154 USPQ 173, 177 (CCPA 1967)."

The law is quite clear that in order for a claimed invention to be rejected on obviousness, the prior art must suggest the modifications sought to be patented; In re Gordon, 221 U.S.P.Q. 1125, 1127 (CAFC 1984); ACS Hospital System, Inc. v. Montefiore Hospital, 221 U.S.P.Q. 929, 933 (CAFC 1984). The foregoing principle of law has been followed in Aqua-Aerobic Systems, Inc. v. Richards of Rockford, Inc., 1 U.S.P.Q. 2d, 1945 (D.C. Illinois 1986). In the Aqua-Aerobic's case, the Court stated that the fact that a prior reference can be modified to show the claimed invention does not make the modification obvious unless a prior reference suggests the desirability of the modification.

In In Re Oetiker, 24 U.S.P.Q. 2nd 1443, 1445 (CAFC 1992) held:

"There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself."

Most significantly, the CAFC in the case of In Re Dembiczak, 50 U.S.P.Q.2<sup>nd</sup> 1614 (CAFC 1999) held at 1617:

“...(examiner can satisfy burden of obviousness in light of combination ‘only by showing some objective teaching [leading to the combination]’);”

Thus, it is clear that where an individual reference does not teach the entire invention, then the modification which the invention represents must be suggested and motivated by some other reference through some objective teaching and cannot come from the application itself, which is not the case here since there is but one reference cited. Hence, there clearly can be no suggestion of modifications in any way, let alone as suggested by the Examiner.

The citation to column 8, lines 45-47, does not cure this defect since the examples are all above the Leidenfrost temperature. However, even if the range were that broad, the claims would still be allowable. The fact a claimed product is within the broad field of the prior art and one might arrive at it by selecting specific items and conditions does not render the product obvious in the absence of some directions or reasons for making such selection. Ex parte Kuhn (POBA 1961) 132 USPQ 359.

Thus, claims 1, 3, 5, 7 and 43 are clearly allowable over Fukui et al.

Claims 4, 10, 30, 31, and 40 have been rejected under 35 USC § 103 (a) as being unpatentable over Fukui et al in view of JP6-143142. This rejection is not thought to be well taken. These claims are all dependent, directly or indirectly, on claim 1 or claim 10. The JP6-143142 reference does not overcome the deficiencies noted above in the Fukui et al reference. Moreover, the JP6-143142 reference does not suggest the use of a surface analyzer, but rather a material component analyzer in conjunction with a shot blast. This certainly does not teach a surface analyzer in conjunction with scale conditioning.

Thus, for these additional reasons, claims 4, 10, 30, 31 and 40 are allowable.

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The allowability of claims 32-34, 38, 39, 44 and 45 is gratefully acknowledged.

Respectfully submitted,

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Enclosure